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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/690,824
Filing Date: October 23, 2003
Appellant(s): MALET ET AL.

Harry B. Shubin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 10, 2008 appealing from the Office action mailed August 09, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,331,786	Foy et al	05-1982
6,330,463	Figuly et al	10-2001
6916517	Montanari et al	07-2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(I) Claims 1-5 and 9-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. 4,331,786 (Foy et al).

Foy et al disclose polyether-ester-amide block copolymers prepared by reacting I) a polyamide having terminal carboxylic acid groups and II) a polyetherdiol (column 3, lines 63-65). The polyamides have carboxylic acid end groups and are obtained by polycondensing i) either a lactam, an amino acid or a diacid associated with a diamine in the presence of an excess amount of ii) an organic dicarboxylic acid (column 4, lines 3-10). The polyetherdiol includes polytetramethylene glycol (PTMG), has an average molecular weight of from about 200 to 6,000 and, preferably, comprises from about 10-50% by weight of the copolymer (column 5, line 46 - column 6, line 15 and examples). The polyether and polyamide blocks are immiscible (column 3, lines 1-6). The copolymers are substantially colorless and are distinguished by the same

intrinsic viscosity as appellants' (see Foy abstract and present specification page 9, lines 11-17), a Shore A hardness of from about 60-90 (varying with the amount of polyetherdiol) and can be formed into a variety of form-stable shaped articles.

The reference exemplifies various block copolymers prepared by reacting I) polyamide having carboxylic end groups (made by polycondensing either a lactam, an amino acid or a diacid associated with a diamine in the presence of adipic acid) with II) PTMG (examples 8-10, 13-16, 18 and 19). Not only do said copolymers meet the requirements of the above-rejected claims in terms of the types of materials used, their contents and molecular weights but they are produced from essentially the same process employed in the production of the presently claimed copolymers and possess the same intrinsic viscosity. The lactam, amino acid and diacid/diamine materials of the reference precisely meet appellants' "linear aliphatic predominately semicrystalline monomer" (per claims 2-4) while the adipic acid reads on appellants' generically recited "comonomer". In this regard, it is noted that appellants' specification clearly states that said comonomer "***may be any comonomer***" inclusive of linear monomers (page 6, lines 11-15), thus embracing the reference's adipic acid. Furthermore, since the reference's dicarboxylic acid amount falls within the corresponding content defining appellants' comonomer (less than 45% of polyamide block; specification page 7), it is reasonably believed that appellants' generically claimed "sufficient amount… to reduce the crystallinity of the polyamide blocks" would be met by the reference. Accordingly, given that the reference copolymers not only meet the claimed requirements with regard to types of materials used, contents and molecular weights but are also produced from essentially the same process employed in the production of the presently claimed copolymers and possess the same intrinsic viscosity, it is reasonably believed that they would

necessarily possess the same properties defining appellants' copolymers, i.e., shore D hardness values. The onus is shifted to appellants to establish that the product of the present claims is not the same as or obvious from those set forth by the reference.

Claim 5 has been incorporated into this rejection since appellants' comonomer can also be met by patentees' lactam, amino acid or diacid/diamine materials and appellants' generically recited "linear aliphatic predominately semicrystalline monomer" can read on patentees' adipic acid.

(II) Claims 1, 2, 5 and 8-14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. 6,300,463 (Figuly et al).

Figuly et al disclose copolymers containing polytetramethylene ether (PTMG) blocks and polyamide blocks. The copolymers are useful as molding resins and for fibers.

The reference exemplifies various block copolymers comprising polyamide blocks and PTMG blocks that appear to meet the claimed requirements with regard to types of materials used, contents and molecular weights as well as appellants' disclosed method of preparing the presently claimed copolymers. Suitable exemplified polyamide blocks comprise nylon 12 and adipic acid units or nylon 11 and decanedicarboxylic acid units. The nylon 12 and nylon 11 units of the reference precisely meet appellants' "linear aliphatic predominately semicrystalline monomer" (per claims 2-4) while the diacid units read on appellants' generically recited "comonomer". In this regard, it is noted that appellants' specification clearly states that said comonomer "***may be any comonomer***" inclusive of linear monomers (page 6, lines 11-15), thus embracing the reference's diacids. Furthermore, since the reference's diacid amount falls within the corresponding content defining appellants' comonomer (less than 45% of polyamide block;

specification, page 7), it is reasonably believed that appellants' generically claimed "sufficient amount… to reduce the crystallinity of the polyamide blocks" would be met by the reference. Accordingly, given that the reference copolymers not only meet the claimed requirements with regard to types of materials used, contents and molecular weights but are also produced from essentially the same process employed in the production of the presently claimed copolymers, it is reasonably believed that they would necessarily possess the same properties defining appellants' copolymers, i.e., shore D hardness values. The onus is shifted to appellants to establish that the product of the present claims is not the same as or obvious from those set forth by the reference.

Claim 5 has been incorporated into this rejection since appellants' comonomer can also be met by patentees' nylon 11 or nylon 12 units and appellants' generically recited "linear aliphatic predominately semicrystalline monomer" can read on patentees' diacid units.

Claim Rejections - 35 USC § 103

(III) Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,916,517 (Montanari et al).

Montanari et al disclose transparent polyamide compositions comprising, inter alia, a copolymer governed by a preferred Shore D hardness of between 30 and 70 comprising polyamide blocks and polyether blocks as component (C) (column 7, lines 9-14). The copolymers are, preferably, prepared by reacting I) a polyamide having terminal carboxylic acid groups and II) a polyetherdiol (column 6, lines 52- 60). The polyamides having terminal carboxylic acid groups are derived from the condensation of lactams, amino acids or diacids associated with diamines in the presence of a chain-limiting dicarboxylic acid. Copolyamides

can be suitably employed as said polyamide block as disclosed in the "second" and "third" embodiments of the reference (column 7, line 46 - column line 23). These copolyamides can be derived from the condensation of mixtures of amino acids and/or lactams or alternatively from the condensation of amino acids and/or lactams with a diamine and diacid. As to the proportions of said constituents, it is clear that various proportions can be used just so long as a final copolymer having the preferred Shore D hardness of between 30 and 70 is obtained. (per disclosures column 8, lines 20-23, etc.). The polyetherdiol includes polytetramethylene glycol (PTMG), has a number- average molecular weight of from 100 and 6,000 and, preferably, comprises from about 10-50% by weight of the copolymer (column 8, lines 34-38 and examples). Suitable copolymers comprise a polyamide block derived from nylon 12 or nylon 6 and a polyether block derived from PTMG (examples).

In essence, the disclosure of the reference differs from the presently claimed invention in not expressly exemplifying a copolymer comprising a polyamide block which is derived from a combination of monomers corresponding to appellants' "semicrystalline monomer" and "comonomer". It is maintained that it would have been obvious to one having ordinary skill in the art to have produced a copolymer comprising copolyamide blocks derived from a combination of lactams, amino acids and/or diacids associated with diamines with the reasonable expectation of success in that copolyamides are clearly within the scope of the reference's "second" and "third" embodiments. For example, it would have been obvious to one having ordinary skill in the art to have substituted a copolyamide block in place of the homopolyamide block in the exemplified copolymers having PTMG blocks with the reasonable expectation of success. The reference clearly teaches that combination of polyamide precursors, e.g., lactams,

amino acids, diamine/diacid, can be used in the production of the polyamide blocks, said combination essentially corresponding to appellants' semi-crystalline monomer and comonomer. As to the amount of monomers employed by the reference, it is clear that various proportions of said constituents can be adopted just so long as a final copolymer having the preferred Shore D hardness of between 30 and 70 is obtained. Accordingly, absent evidence of unusual or unexpected results, no patentability can be seen in the presently claimed subject matter.

(10) Response to Argument

Appellants argue that Foy et al's diacids are employed in a way such that they are chain-stoppers rather than comonomers thus resulting in homopolyamide blocks, and not copolyamide blocks. Regarding the first alleged difference, it is maintained that the diacid chain limitator of the reference functions as both a comonomer and as a chain-stopper. This diacid is present during the polycondensation reaction of the polyamide and is said to "form constituents of the macromolecular polyamide chain" (column 4, lines 12-14). It is used in excess amounts with respect to the amount necessary for obtaining a polyamide having terminal carboxylic acid groups so as to control the length of the macromolecular chain and consequently the average molecular weight of the polyamide (column 4, lines 17-24 and 42-54). By using excess amounts of the dicarboxylic acid, it is reasonably maintained that said diacid limitator serves two functions, namely, 1) as a difunctional monomer it would partake in the formation of amide groups by reacting with the amino groups of the polycondensable monomers to "form constituents of the macromolecular polyamide chain" thus limiting the growth of the polyamide chains and 2) as a chain stopper to provide the polyamide with carboxylic acid end groups.

Furthermore, there is nothing in the appealed claims which precludes the comonomer from also being the chain-stopper that provides the polyamide with the carboxylic end groups. As presently recited, these materials can be one and the same entity. Thus, the diacid is deemed to fulfill applicants' claimed comonomer. As to the second alleged difference, it is maintained that the copolyamide feature upon which appellants rely is not recited in the claims. When the presently recited claims are given their broadest reasonable interpretation, they encompass polyamide blocks derived by polycondensing a lactam, an amino acid or a diacid associated with a diamine in the presence of an excess amount of an organic dicarboxylic acid. The lactam, amino acid or diacid/diamine materials of the reference precisely meet appellants' "linear aliphatic predominately semicrystalline monomer" (per claims 2-4) while the adipic acid reads on appellants' generically recited "comonomer". In this regard, it is noted that appellants' specification clearly states that said comonomer "***may be any comonomer***" inclusive of linear monomers (page 6, lines 11-15), thus embracing the reference's adipic acid. The diacid is used in sufficient amounts to partake in the formation of amide groups by reacting with the amino groups of the polycondensable monomers, as implied by the reference's indication that it forms "constituents of the macromolecular polyamide chain".

As with Foy et al, appellants argue that Figuly et al's diacids are employed in a way such that they are chain-stoppers rather than comonomers thus resulting in homopolyamide blocks, and not copolyamide blocks. It is again maintained that the diacid of the reference would function both as a comonomer and as a chain-stopper. This diacid is present in excess amounts during the polycondensation reaction of the polyamide block and, as such, it is reasonably maintained that said diacid would function in two capacities, namely, 1) being a difunctional

monomer it would partake in the formation of amide units by reacting with the amino groups of the aminoacid and/or lactam monomers thus limiting the growth of the polyamide chains and 2) as a chain stopper to provide the polyamide with carboxylic acid end groups. Furthermore, there is nothing in the appealed claims which precludes the comonomer from also being the chain-stopper that provides the polyamide with the carboxylic end groups. As presently recited, these materials can be one and the same entity. Thus, the diacid is deemed to fulfill applicants' claimed comonomer. As to the second alleged difference, it is maintained that the copolyamide feature upon which appellants rely is not recited in the claims. When the presently recited claims are given their broadest reasonable interpretation, they encompass polyamide blocks derived by polycondensing a lactam and/or amino acid in the presence of an excess amount of an organic dicarboxylic acid. The lactam and/or amino acid of the reference precisely meet appellants' "linear aliphatic predominately semicrystalline monomer" (per claims 2-4) while the diacid acid reads on appellants' generically recited "comonomer". In this regard, it is noted that appellants' specification clearly states that said comonomer "***may be any comonomer***" inclusive of linear monomers (page 6, lines 11-15), thus embracing the reference's diacids. The diacid is used in sufficient amounts to partake in the formation of amide groups by reacting with the amino groups of the polycondensable monomers, as implied by the reference's indication that it forms "units" of the polyamide block.

Regarding Montanari et al, appellants' main argument is that the reference does not teach the combination of a semi-crystalline monomer and a comonomer. It is maintained that it would have been obvious to one having ordinary skill in the art to have produced a copolymer comprising copolyamide blocks derived from a combination of lactams, amino acids and/or

diacids associated with diamines with the reasonable expectation of success in that copolyamides are clearly within the scope of the reference's "second" and "third" embodiments. For example, it would have been obvious to one having ordinary skill in the art to have substituted a copolyamide block in place of the homopolyamide block in the exemplified copolymers having PTMG blocks with the reasonable expectation of success. The reference clearly teaches that combination of polyamide precursors, e.g., lactams, amino acids, diamine/diacid, can be used in the production of the polyamide blocks, said combination essentially corresponding to appellants' semi-crystalline monomer and comonomer. As to the amount of monomers employed by the reference, it is clear that various proportions of said constituents can be adopted just so long as a final copolymer having the preferred Shore D hardness of between 30 and 70 is obtained. Accordingly, absent evidence of unusual or unexpected results, no patentability can be seen in the presently claimed subject matter.

As to claims 6 and 7, it is noted that it is within the scope of the reference to employ cyclic diamines, e.g., BACM and IPD, column 8, lines 6-15.

(11) Related Proceeding(s) Appendix

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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